Collaborator Engagement and Knowledge Mobilization

Hayley Carlson

July 18th, 13:00-13:15

Amin Haghnegahdar — Project Manager
Stephanie Merrill — KM Specialist
Hayley Carlson — User Engagement Specialist
Mike Renouf — PPWB
Bob Halliday — PSRB
Wayne Jenkinson — IJC

D1: Outreach and User Engagement

WORKING PACKAGE KM PLAN
Theme A3: Integrating land-surface and in-stream water quality processes into hydrologic modelling

Participatory Working Group Members

Saskatchewan Water Security Agency	Jeff Sereda and John-Mark Davies
Prairie Provinces Water Board (PPWB)	Joanne Sketchell and Mike Renouf
International Joint Commission (IJC)	Glenn Benoy
Manitoba Sustainable Development	Nicole Armstrong

Knowledge Mobilization Plan

This modelling work will support knowledge users in assessing how particular water management scenarios will influence river water quality. In their letter of support for the IMPC proposal and the GWF Stakeholder Assessment, the PPWB note that they are concerned with water quality conflicts, and have identified eutrophication and nutrient transport as the most significant water quality issue in the Prairies. The IJC has pioneered work in developing the Sparrow model in Canada along transboundary regions, and continues to do so in the Great Lakes basin. They want to see IMPC extend and expand upon that work.

To mobilize the research knowledge this WP produces, PWG members will be invited to provide feedback on the research and co-author journal articles on an ongoing basis. PWG members and the Investigators will share resources such as water quality, hydrometric and land-use data. The lead Investigator (Dr. Lindenschmidt) will communicate approximately once a month by phone with members of the PWG, particularly as problems or questions on research progress emerge. Dr. Lindenschmidt has a previous work background in government and industry, and also shares a long-standing working relationship with many PWG members.

The main mechanism Dr. Lindenschmidt plans to use to engage collaborators in the process of producing research knowledge is to hold a participatory modelling workshop in Year 2. This will be modelled after a January 2018 workshop Dr. Lindenschmidt hosted for the Water Security Agenda and Saskatchewan Ministry of Agriculture focused on water quality modelling in the Qu-Appelle River Basin. The full-day workshop involves hands-on modelling exercises to build capacity to understand the mechanics of the models, presentations on research progress and applications of the models, and ends with an open discussion about collaborator needs, characterizing uncertainty and complexity.

Investigators

Karl-Erich Lindenschmidt
Al Pietroniro
John Pomeroy
Howard Wheater
Saman Razavi

Objectives

To develop new water quality modelling functionality and integration with MESH, focusing on large-scale modelling needs. Using SPARROW, comparing HYPE, CRHM and WASP.

Deliverables

❖ SPARROW model for Nelson-Churchill;
❖ Basin-scale water quality modelling toolkit linked to MESH and water resources models; and
❖ Simulations of long-term climate change impacts on water quality.

The Knowledge Mobilization Oversight Committee

Terms of Reference
IMPC Knowledge Mobilization Oversight Committee (KMOC)

1.0 BACKGROUND

1.1 Global Water Futures Program

Global Water Futures: Solutions to Water Threats in an Era of Global Change (GWF) is a research program that is funded in part by a $77.8-million grant from the Canada First Research Excellence Fund. The overarching goal of the program is to deliver risk management solutions - informed by leading-edge water science and supported by innovative decision-making tools - to manage water futures in Canada and other cold regions where global warming is changing landscapes, ecosystems, and the water environment.

1.2 Integrated Modelling Program for Canada (IMPC)

The Integrated Modeling Program for Canada (IMPC) is a transdisciplinary research project that aims to deliver forecasting and prediction of the current and future quality and quantity of Canada's waters. The research team will develop and integrate advanced modelling tools to represent interactions across climatic, hydrological, ecological, economic, and management systems, to enable prediction of new extremes and disaster events such as floods and droughts and provide a new paradigm for model development, integrated water management, and user engagement. During Years 1-3, the research focuses on 4-5 major basins: Nelson-Churchill, Mackenzie, Great Lakes St. Lawrence and Yukon River basins. In years 4-7, the programme aims to include the Columbia, Frazer and St. John River basins.

The following outcomes are targeted in the first 3 years:

1. Develop next-generation hydrological and land surface models to address changing cold region processes and associated societal risks;
2. Develop a platform for integrated water resources management that fully couples anthropogenic factors with natural systems models, including ecosystem constraints;
3. Use models as vehicles to explore alternative futures, highlight critical trade-offs and support policy decisions and development trajectories; and
4. End-user informed model development and output design to develop decision support visualization tools.

KM Questions Added to the Inception Report

- How are you including end-users or collaborator in the process of producing your research knowledge?
- How, and how often, do you communicate?
- What resources or information do you share?
- How are you incorporating the knowledge and needs of your partners to ensure your work is relevant to their needs?
- How do you expect your work will impact your partners and Canadians?

Participatory Working Group

Partners for the Saskatchewan River Basin (Bob Halliday);

Prairie Provinces Water Board (Mike Renouf);

The Saskatchewan River Delta Stewardship (Denise MacKenzie);

Northern Village of Cumberland House (Kelvin McKay);

Metis Local 42 (Ryan Carrier);

The Saskatchewan Water Security Agency (Curtis Hallborg);

The City of Calgary (Frank Frigo); and

Manitoba Hydro (Kevin Gawne).

Knowledge Mobilization Plan

How, and how often, do you communicate? At this stage we are anticipating collaborating iteratively with collaborators in two stages. In Y1-Y2 we will communicate with key water experts, concentrating on the Nelson-Churchill Basin, to validate policy options captured in an Environmental Scan. In Y3 we will host a scenario planning workshop with knowledge users (e.g. farmers, indigenous groups, policy-makers) in the Nelson-Churchill Basin to explore scenarios in a decision-theatre format.

What resources or information do you share? Resources captured and summarized in the Environmental Scan will be shared with collaborators. Partner feedback will be incorporated via the validation of the policy options incorporated in final models. We are anticipating incorporating end-user feedback in Y3 during scenario risk and vulnerability analysis.

How are you incorporating the knowledge and experience of your partners to ensure your work is relevant to their needs? Iterative engagement with experts, and a commitment to incorporate feedback to guide the latter stages of research, will ensure our work meets the knowledge needs of knowledge user communities.

How do you expect this work will impact your partners and knowledge users in Canada? Results will reveal how vulnerable key governance agreements, development strategies, and ecosystem services are to uncertainties about the climate and policy decisions. Research may also provide an operational model for decision-makers to gather knowledge users input and explore trade-offs.

Inception Report KM Plans

WORKING PACKAGE KM PLAN
Theme C1: Future scenario generation for river-basin scale changes in climate, land surface, and water resources

Investigators

Patricia Gober
Al Pietroniro
Saman Razavi
Howard Wheater
John Pomeroy
Yanping Li
Karl-Erich Lindenschmidt
John Pomeroy

Objectives

To produce probability distributions of climate model results and water policy scenarios for stress testing, risk analysis, problem solving and vulnerability analysis.

Deliverables

- Probability distributions of high resolution climate change scenarios;
- Water policy scenarios; and
- Decision-theatre visualization of model results.

Participatory Working Group Members

For the Nelson-Churchill:

The Saskatchewan River Delta Stewardship	Denise MacKenzie
Prairie Provinces Water Board	Mike Renouf
Partners for the Saskatchewan River Basin	Bob Halliday
Northern Village of Cumberland House	Kelvin McKay
Metis Local 42	Ryan Carrier
Water Security Agency	Curtis Hallborg
The City of Calgary	Frank Frigo
Manitoba Hydro	Kevin Gawne

Knowledge Mobilization Plan

Results of this research will reveal how vulnerable key governance agreements, development strategies, and ecosystem services are to uncertainties about the climate and policy decisions. It is expected that this research may also provide an operational model for decision-makers to gather knowledge user input and explore decision trade-offs.

At this stage we are anticipating collaborating iteratively with collaborators in two stages. In Y1-Y2 we will communicate with key water experts in our Participatory Working Group to validate policy options captured in an Environmental Scan. In Y3 we will host a scenario planning workshop with knowledge users (e.g. farmers, indigenous groups, policy-makers) in the Nelson-Churchill Basin to explore scenarios in a decision-theatre format.

Iterative engagement with experts, and a commitment to incorporate feedback to guide the latter stages of research, will ensure our work meets the knowledge needs of knowledge user communities.

Resources captured and summarized in the Environmental Scan process during Y1-Y2 will be shared with collaborators. Partner feedback will be incorporated via the validation of the policy options incorporated in final models. We are anticipating incorporating end-user feedback in Y3 during scenario risk and vulnerability analysis.

Revised KM Plan for each Work Package

April 17, 2018

Bin Luo
Manitoba Infrastructure
bin.luo@gov.mb.ca

Dear Bin Luo,

We are writing to you from the Integrated Modelling Program for Canada (IMPC), led by Dr. Saman Razavi at the Global Institute for Water Security in Saskatoon, Saskatchewan. IMPC is one of the 33 research programs funded under the Global Water Futures (GWF) Program. The aim of our program is to develop integrated modelling capability for the prediction and management of water resources in Canada within seven major river basins, with the immediate focus on the Nelson-Churchill and Mackenzie basins.

The IMPC has four main research themes focused on integrated earth systems modelling (Theme A), water management modelling (Theme B), decision-making under uncertainty (Theme C) and user engagement (Theme D). Under each of these themes, we have several work packages led by different investigators. **Bin, you have been identified as a potential partner for research taking place under Theme A focused on integrating river ice processes into hydrologic modelling.**

Specifically this research (Work Package A4), led by Dr. Karl-Erich Lindenschmidt, aims to integrate the RIVICE model with the MESH and GEM-Hydro forecasting system as well as remotely sensed ice thickness to study the impact of climate change on ice jam flood severity. During the GWF Stakeholder Assessment, many organizations in Manitoba indicated that they would appreciate a better understanding of snow and ice and how this affects flooding now and in the future. Many of these organizations are interested in improving models to reflect these processes. In terms of IMPC work, the Red River is a priority area for forecasting and modelling.

We are writing to invite you to become a member in the Participatory Working Group associated with this research. This invitation does not require any additional commitments from yourself or Manitoba Infrastructure; rather our purpose is to suggest a specific mechanism within IMPC for representatives of Manitoba Infrastructure to engage more in depth with the research. Dr. Lindenschmidt plans to engage Participatory Working Group members in a participatory modelling workshop in the next year. This full-day workshop would involve hands-on modelling exercises to build capacity to understand the mechanics of water quality models, presentations on research progress and applications of the models, and an open discussion about collaborator needs, characterizing uncertainty and complexity.

If you are interested, we will contact you with additional details about the workshop later this year. Outside of this upcoming workshop, please feel free to contact Dr. Lindenschmidt about his river ice modelling work

Integrated Modelling Program for Canada (IMPC) Partner Engagement Survey

Introduction

1 / 8   13%

Thank you for taking part in this survey. Partners are key to the creation and communication of knowledge within the Integrated Modelling Program for Canada (IMPC). During our kick-off workshop in the fall of 2017, our partners asked us to design a survey to help the project management team understand their interests.

A good understanding of our partner-investigator network will support project work that can meet partner needs and match their interests. This survey will allow us to collect and visualize data about how partners are connected to projects and researchers, what types of research disciplines are involved in the project, and design more effective and convenient engagement around specific preferences.

This baseline data will be used to track collaboration over the years of the project (3-7 years), as data is re-collected at strategic times to check progress. For example, in the later stages of the project we expect to see additional partners involved.

The survey is 11 questions and should take less than 15 minutes to complete.
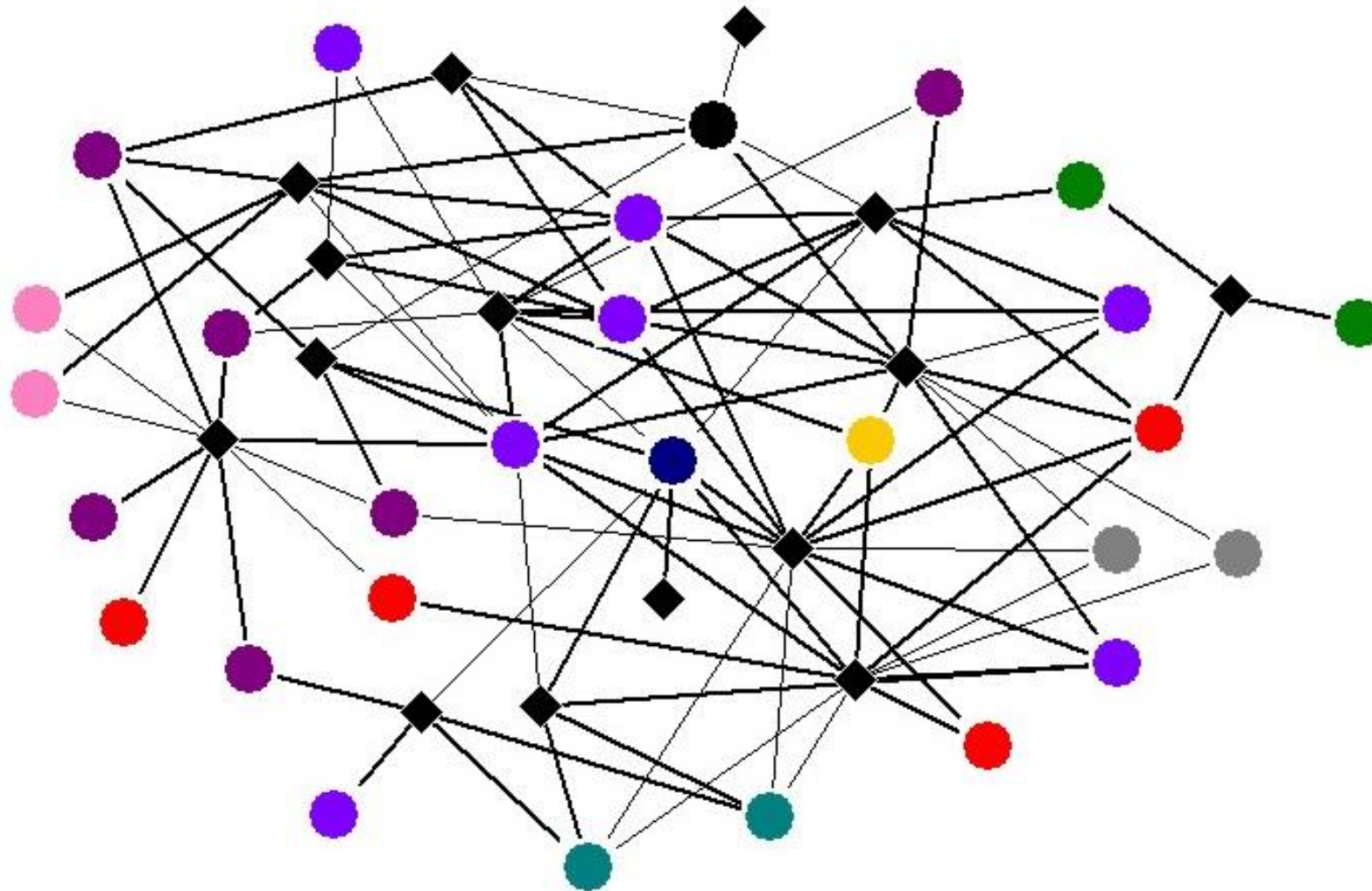
Next

Collects information about:
- Disciplinary background
- Ideal engagement
- Interest in specific IMPC working packages
- Connections in the IMPC network
- Perceptions about the project

What are the characteristics of the social network the IMPC team is trying to establish?
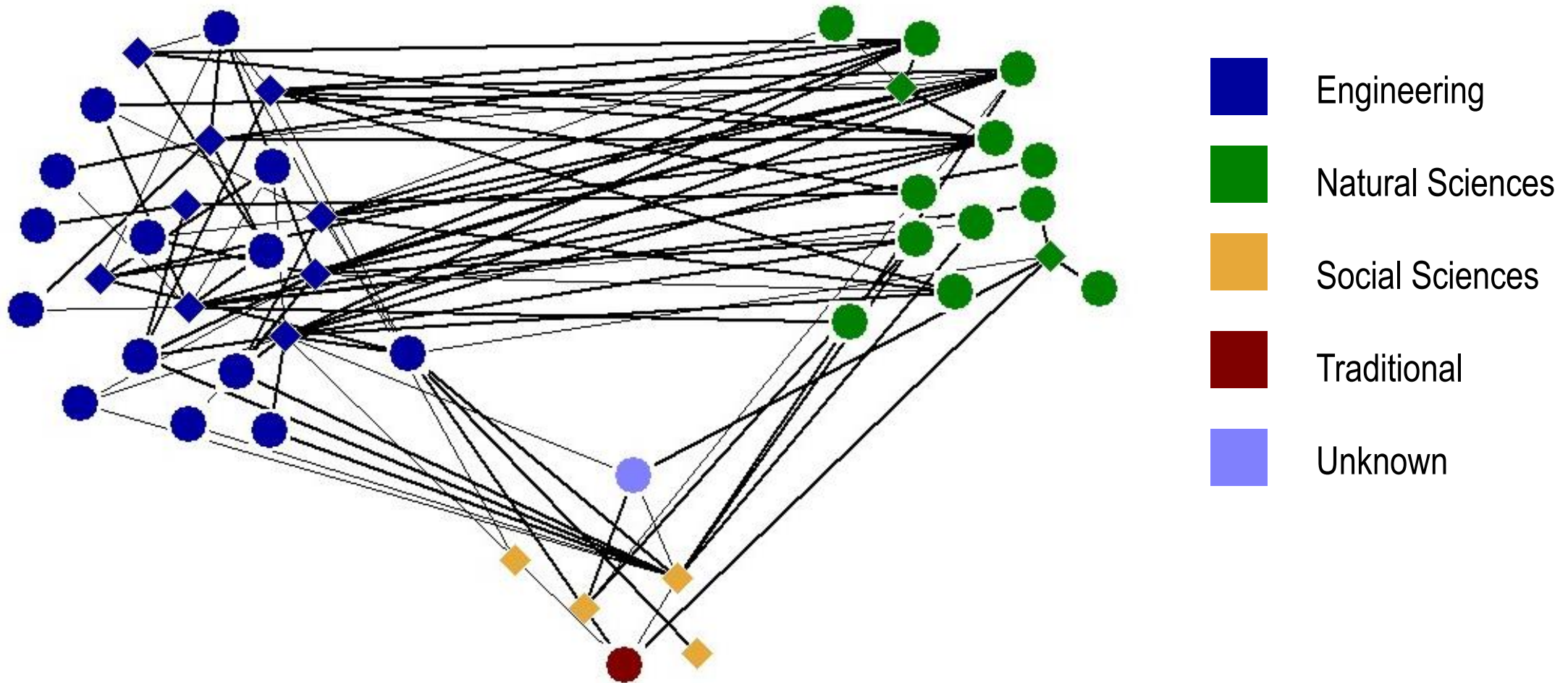
- Interdisciplinary, with strong ties between those of different disciplines.

- Transdisciplinary, with many different types of knowledge user communities involved.

- Collaborators should influence research; there should be good reciprocal ties between collaborators and investigators.

Transdisciplinary connections

Academic

Boundary Organization

Community

Federal Government

International

Municipality

Non-profit

Provincial Government

Utility

Unknown

Investigators are diamonds; collaborators are circles

IMPC Discipline Clusters

Investigators are diamonds; collaborators are circles

Are knowledge user communities influencing research?

- Two-way engagement defines the majority (71%) of the relationships in the IMPC social network.

- One-third of relationships are ongoing (as opposed to intermittent) relationships, and more than 50% center around IMPC research.

"I feel that multiple perspectives have been considered in the design of the project."

"Organizations and individuals that will use the information and outputs of this project are all included in discussion about the project. "

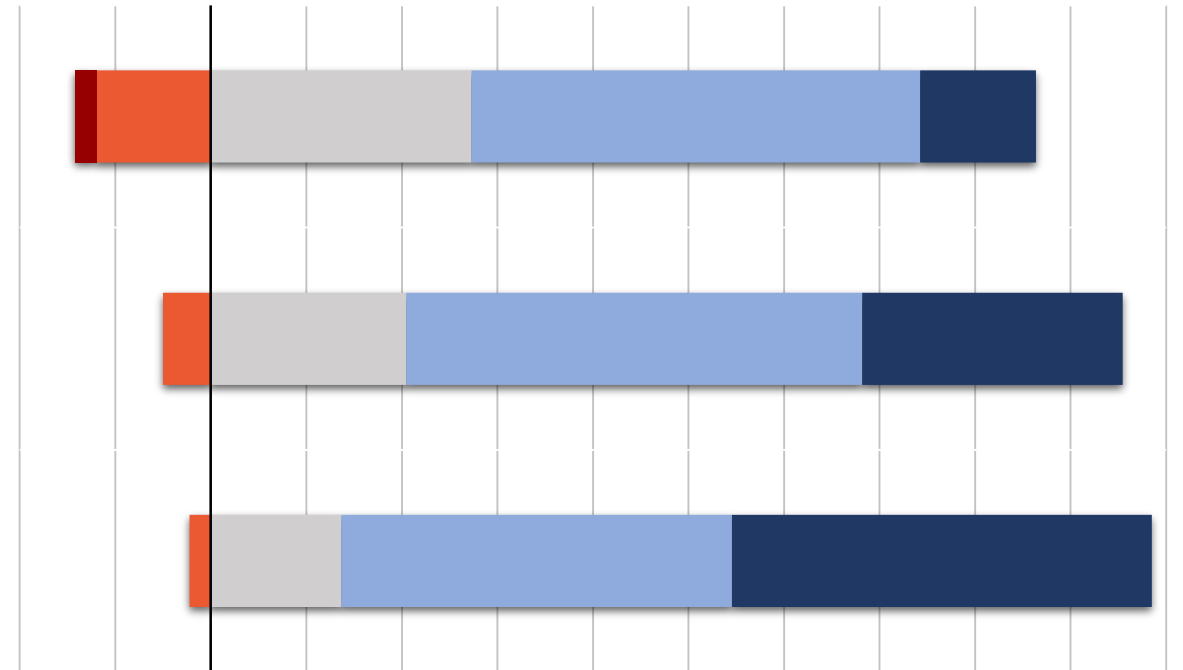"I understand how I can connect to the project work if I want to."

Knowledge is Legitimate

Knowledge is Credible

Knowledge is Salient

-20 -10 0 10 20 30 40 50 60 70 80 90 100

■ Disagree ■ Strongly Disagree ■ Unsure ■ Agree ■ Strongly Agree

(Cash et al. 2003).

IMPC Collaborators…

- ...usually have specific interests when it comes to participating in co-production activities, but have a general interest in overall progress and results of the project.
- …have an interest in receiving regular updates
- …want access to end-products associated with the research.
- …can provide specific expertise and perspectives.
- …want the opportunity to be heard and contribute.
- …want the research to benefit their organization.
- …want to co-produce processes and outcomes with IMPC researchers.